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BUREAU OF HEALTH PROFESSIONS

AN ASSESSMENT OF THE W. B. SCHWARTZ, F. A. SLOAN, AND D. N. MENDELSOHN STUDY "WHY THERE WILL BE LITTLE OR NO PHYSICIAN SURPLUS BETWEEN NOW AND THE YEAR 2000"

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AN ASSESSMENT OF THE W. B. SCHWARTZ, F. A. SLOAN, AND D. N. MENDELSOHN STUDY "WHY THERE WILL BE LITTLE OR NO PHYSICIAN SURPLUS BETWEEN NOW AND THE YEAR 2000"

Office of Data Analysis & Management
Parklawn Building - Room 8-41
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Rockville, Maryland 20857

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Health Resources & Services Administration
Bureau of Health Professions

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PREFACE

For many years the Bureau of Health Professions has supported and conducted health personnel data collection, analysis and forecasting activities. In addition to its biennial *Report to the President and Congress on the Status of Health Personnel*, the Bureau also provides its analyses in special reports and studies. This report presents the Bureau's assessment of an important new study of future physician supply and requirements by W. B. Schwartz, F. A. Sloan, and D. N. Mendelsohn, "Why There Will be Little or No Physician Surplus Between Now and the Year 2000" which was published in the April 7, 1988 issue of the *New England Journal of Medicine*.

The report was prepared in the Bureau of Health Professions' Office of Data Analysis and Management (ODAM), Howard V. Stambler, Director, by John Drabek, Ph.D., Chief of ODAM's Technical Analysis and Coordination Branch.

J. Jarrett Clinton

J. Jarrett Clinton, M.D.
Assistant Surgeon General

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Health Resources and
Services Administration
Rockville MD 20857

Bureau of Health Professions

July 1988

Dear Colleague:

In recent months, increased attention has been directed to an examination of the future adequacy of physician manpower supply. Interest in this area has been heightened by the publication of three reports.

A new study of physician supply and requirements by Schwartz, et. al., entitled "Why There Will be Little or No Physician Surplus Between Now and the Year 2000," was published in April in the New England Journal of Medicine. Second, the Council on Graduate Medical Education completed its first report to the Secretary, Department of Health and Human Services (DHHS), and Congress in June, which included conclusions and recommendations regarding physician supply in the aggregate. Finally, at the end of June, the Sixth Report to the President and Congress on the Status of Health Personnel in the United States was distributed by DHHS, which included the latest physician supply projections developed by the Bureau of Health Professions (BHPr), Health Resources and Services Administration.

As part of the ongoing analytic agenda of BHPr, the enclosed assessment of the Schwartz paper was prepared. We welcome your comments on this piece, including any suggestions that you might have for advancing the state-of-the-art in this area. Written comments can be sent to me at room 8-05, Parklawn Building, 5600 Fishers Lane, Rockville, Maryland 20857.

Sincerely,

J Jarrett Clinton/RS.

J. Jarrett Clinton, M.D.
Assistant Surgeon General
Director

Enclosure

AN ASSESSMENT OF THE W. B. SCHWARTZ, F. A. SLOAN, AND D. N. MENDELSOHN STUDY "WHY THERE WILL BE LITTLE OR NO PHYSICIAN SURPLUS BETWEEN NOW AND THE YEAR 2000"

"Why There Will be Little or No Physician Surplus Between Now and the Year 2000," by W. B. Schwartz, F. A. Sloan, and D. N. Mendelsohn, appeared in the April 7, 1988, issue of the New England Journal of Medicine. The report, referred to as "the Schwartz study," represents a useful, significant contribution to the study of the future supply and requirements for physicians. It has also engendered a great deal of discussion and analysis, since it appeared to contradict other reports of a forthcoming oversupply of physicians. In particular, the study takes issue with the projections developed by the Graduate Medical Education Advisory Committee (GMENAC) published in 1980. The Schwartz study employs more recent data than the GMENAC study and uses a different methodology to assess the outlook for physicians. Although the differences in their results and those of GMENAC are most significant, the Schwartz study results also appear to differ from results of the Health Resources and Services Administration's (HRSA) Bureau of Health Professions (BHPr) projections which appeared in the Fifth Report to the President and Congress on the Status of Health Personnel in the United States. After the Schwartz study was published revised HRSA/BHPr projections became available in the Sixth Report to the President and Congress on the Status of Health Personnel in the United States. Overall the Schwartz study projects a 7,000 shortage of supply and requirements for patient care physicians, while the current HRSA/BHPr projections indicate an aggregate oversupply of 71,600 total physicians by the year 2000. This paper presents an analysis of the assumptions made by the Schwartz study, compares them with the assumptions used in other major studies and projections, and presents other evidence relevant to these issues.

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*This paper was prepared by John Drabek, Ph.D., Chief, Technical Analysis and Coordination Branch, Office of Data Analysis and Management, Bureau of Health Professions, Health Resources and Services Administration, PHS, DHHS, June 1988.

Demand for Patient Care Physicians--Major Assumptions of the Schwartz Study

The major evidence of growth in demand for physician services on which the Schwartz study analysis is based consists of two data points from the Kaiser Health Plan of Southern California. The authors chose the Kaiser plan as their baseline because they wanted a growth rate which represents "no more care than appropriate." The baseline figure used in the Schwartz study is approximately one physician for each 840 enrollees. To project this baseline figure forward the authors apply a growth rate calculated from the ratios of physicians to enrollees in 1965 and 1982. This implies a gross average annual growth rate of 1.33 percent, or of 1.03 percent per year after the study's adjustment for the increased enrollment of elderly individuals by 1982. The authors postulated that this growth of 1.03 percent per year was applicable to all prepaid group practices (PGPs) and would continue through 2000.

The authors do not present explanatory data on their assumptions about growth in demand in the Independent Practice Association (IPA) and fee for service sectors. Instead, they simply assumed that in 2000 these sectors would require 10 percent and 25 percent more physicians respectively than would the PGPs. Since no baseline ratios are given for the IPA and fee-for-service sectors, it is difficult to determine whether the authors believe that the growth in demand in these two sectors will be different from that of the PGPs.

The study also assumes that more elderly persons are likely to be treated in PGPs in 2000, and the authors used Health Care Financing Administration (HCFA) data for 1978 to establish that elderly individuals have expenditures which are 2.68 times those of the under age 65 population. This results in the addition of an adjustment factor to the basic historical growth rate mentioned earlier (1.03 percent) which serves to raise the projected growth rate for prepaid group practices to 1.6 percent per year.

The authors also project that the overall demand for medical residents will increase at 1.94 percent per year. This results from their assumption that the basic historical growth rate for the prepaid group practice (1.03 percent) will apply to the medical residents as well. Population growth would add another 0.8 percent per year and the aging of the population would add another 0.11, bringing the total demand increase to 1.94 percent per year. However, the relationship between demands in the various sectors described above and the demand for medical residents is not discussed.

The authors' calculations and analyses provide a useful perspective on physician requirements which is different from other major studies in this area. However, their results depend critically on whether the historical experience of one Kaiser plan is a valid proxy for estimating the future demand for physicians in the entire U.S health care system. The study vividly illustrates the lack of data in certain key areas. So little is known about utilization and staffing rates in prepaid group practices and similar organizations that it is not known whether the Kaiser data are even representative of other prepaid group practices let alone the entire U.S.

Demand for Physicians' Services--Other Evidence

The extent of growth in the demand for physicians' services that has actually occurred in the past depends upon the specific measures that are examined. Although the Schwartz study selected the growth in one of the Kaiser plans over a 17 year period (1965-1982) as their measure for the future demand increase, it is difficult to determine how representative this growth is of other settings. For example, large national sample surveys of practicing physicians conducted by the Center for Health Policy Analysis of the American Medical Association show that declines in patient visits per physician have occurred in the 1970s and 1980s (See Tables 1 and 2). These declines have been offset by significant increases in physician incomes that have occurred at the same time. Although other factors, such as the increased supply of physicians, changing specialty mix, changes in the clinical practice of medicine, and fee increases must be considered in interpreting these statistics, it is difficult to accept the premise that strong sustainable increases in demand are occurring when patient contacts are not growing. Moreover, the data in Table 2 indicate that the decline in hospital utilization that has occurred since the Medicare Prospective Payment System was introduced has not been offset by increased patient contacts in the office.

It is difficult to make specific comparisons among major projections of physician supply and requirements because of differences in the ways physicians are counted. Nevertheless, Table 3 attempts to summarize the results of these studies in terms of the annual percentage changes in their per capita physician requirements to the year 2000. The GMENAC study, for example, assumed a constant per capita utilization of physician services as a desirable and achievable goal to pursue. Because of the strong growth that was anticipated in the supply of physicians, this led the GMENAC to conclude that there would be a surplus of approximately 140,000 physicians in 2000 if its goals were achieved. On the other hand, the Schwartz study assumes that strong growth in the per capita demand for physician services is likely to occur and concludes that it is therefore unlikely that there will be a surplus of physicians. This strong growth is also consistent with projections made bypossibility for changes in demand for physicians by combining population the Bureau of Labor Statistics (BLS), although the BLS does not draw conclusions concerning the degree of shortage or surplus in its projections. An intermediate position is taken by the BHPr which concludes that an oversupply of 71,600 physicians is likely to occur by 2000 if the moderate increase anticipated in the per capita demand for physician services occurs.*

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*There is actually a much larger difference between the GMENAC and the BHPr or BLS analyses than a first glance at Table 3 would suggest. Substantial growth in the physician supply occurred between 1978 and 1986, and the BHPr and BLS rates begin after this growth occurred whereas the GMENAC figures precede this growth.

Some additional evidence is provided by an analysis of the NCHS surveys which has recently been completed by the Center for Health Policy Analysis of the American Medical Association. This study sheds additional light on the possibility for changes in demand for physicians by combining population projections and utilization rates for each age, sex, race, and income subgroup. The results of the population based portion of this analysis indicate that there will be an increase of 2.6 percent in per capita utilization between 1985 and 2000 or an average annual increase of .17 percent. If one uses the office visit utilization rates from the physician based National Ambulatory Medical Care Survey, there would appear to be no overall increase anticipated in per capita utilization between 1985 and 2000, but significant changes in the utilization of various specialties. Therefore, it is very difficult to conclude that demographic shifts alone will significantly increase the demand for care. The demographic shifts would have to be accompanied by strong increases in the utilization rates for each population subgroup for this to occur.

Supply of Patient Care Physicians--Comparison of the Schwartz, Sloan, Mendelsohn Assumptions with Other Evidence

The Schwartz study does not make its own projections of the supply of physicians. Instead the authors adopted the most recent BHPr projection of the supply of active physicians in the year 2000 that was available at the time. After some adjustments they generate the projections of patient care physicians which are published in the article. Several of these adjustments significantly reduce the effective supply of physicians. Of the nearly 697,000 active physicians that BHPr projected for 2000 in its *Fifth Report to the President and Congress on the Status of Health Personnel in the U.S.*, the Schwartz study subtracts 92,000 physicians (or 13.3 percent of the total) that the authors believe will not be in patient care activities, for a variety of reasons. They also subtract about 15,000 (or 2.2 percent) due to reduced resident hours, and over 3,000 (or 0.5 percent) to reflect the lower working hours of female physicians as compared with male physicians. This leaves about 585,000 physicians (or 84 percent of the BHPr projection) available for patient care in 2000.

The proportion of practicing physicians not in patient care activities has been relatively stable. It rose slightly during the 1970s, while medical school facilities were expanding, but it declined slightly during the 1980s, so that the proportion in 1985 was virtually the same as in 1973. Consequently, BHPr believes that there is considerable uncertainty about whether the proportion of physicians not in patient care will increase by the year 2000 in the numbers Schwartz assume. The authors base much of their analysis on trends between 1979 and 1983, but projections based on the 1981-1986 period yield different, lower results and probably more reliable information, since in both years the American Medical Association (AMA) conducted its Census of Physicians' Professional Activities.

Nearly 44,000 physicians were engaged primarily in nonpatient care activities in 1986. As Table 4 shows, the increase in physicians in administration between 1981 and 1986 is lower than in the 1979-1983 base period assumed by the Schwartz study and projected to 2000. Similarly, the number of physicians in research actually declined in 1986, although this was an anomaly because the AMA in 1986 created a new separate classification for clinical fellows.*

BHPr has not yet studied the issue of physicians in research; until the Schwartz analysis was published, the issue had not been raised. It would seem to depend significantly on not only the future course of National Institutes of Health funding but also the degree to which research is carried on full time or part time.

The Schwartz study also deletes nearly 13,000 physicians whose activities could not be classified by the AMA or whose addresses are unknown to the AMA. BHPr already has made an adjustment for these physicians in its projections. Even more significantly, BHPr estimates that many of these physicians are active but either choose not to respond to the AMA or are difficult to locate.

The adjustment for the increasing proportion of physicians who are women is a relatively small one. It is based on previously observed differences in work efforts between male and female physicians. Whether the physicians entering practice either currently or in the future will exhibit similar differences is uncertain. One recent unpublished study, based on a large national survey of a major specialty, has found no difference between men and women physicians.

Other adjustments not made by the Schwartz study could also be made. For example, one could adjust for the larger proportion of physicians who will reach middle age around 2000. Since that age group has historically reported the greatest numbers of patient visits, such an adjustment would tend to increase the future physician supply relative to the current supply. However, differences in patient visit volumes by physician age appear to have narrowed in 1986 and 1987, making it difficult to determine whether such an adjustment would be meaningful.

Summary and Conclusions

Based on the authors' calculations described above, plus some additional ones to make their 1983 figures more comparable to the 1986 BHPr estimates and projections to 2000, the Schwartz study projections accept the BHPr estimates that the active physician supply will increase from about 544,800 in 1986 to

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* The new classification method should give a more accurate figure for the number of physicians who are pursuing careers in research, but it makes historical comparisons difficult to interpret.

696,550 in 2000 (BHPr). However, the patient care physician supply projections assume an increase from 482,000 in 1986 to 585,000 in 2000 (as described earlier). That is, the active physician supply will increase by about 1.8 percent per year, but the supply of patient care physicians will increase by only about 1.4 percent per year. Taken together with the authors' assumption that the overall demand for patient care physicians is expected to be for about 592,000 physicians in 2000, the net effect is a shortage of about 7,000 physicians. The authors also present other scenarios ranging from a shortage of 60,000 physicians to a surplus of 42,000.

In its own published projections, BHPr assumes a slightly lower annual percentage increase in the requirements for all active physicians (about one percent per year). Moreover, there are no deletions from the BHPr active physician supply projections comparable to those in the Schwartz projections. Thus, the net result for BHPr is an excess of supply over requirements of 71,600 physicians.

The Bureau of Labor Statistics has a projected growth rate of 38.2 percent in requirements for physicians which represents an annual growth rate of 2.3 percent.* However, this growth in requirements, based on previous and anticipated growth in the economy, is above that projected by BHPr and is similar to that assumed by the Schwartz study.

The growth rate of per capita demand assumed by BHPr is above the rate necessary to maintain current utilization rates as the population becomes older in 2000. Although the strong growth projected by the Schwartz study and by the BLS could occur, we believe that it is difficult to justify those projections on the basis of the currently available evidence. Similarly, due to the uncertainties inherent in the process of developing projections there is no way to prove now that BHPr projections will be more accurate than the others.

The Schwartz study mentions the effect of technology on physician requirements but do not present any research on this issue. The clinical practice of medicine has undergone many significant changes in recent years. Some technological innovations, such as organ transplants, affect very few patients and have relatively little impact on the overall physician requirements. Other innovations, such as the intraocular lens implant for cataract surgery patients, the use of enzymes to reduce damage in patients with heart attacks, and the rapid availability of certain laboratory test results in physicians'

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*Since the BLS measures physicians differently than BHPr, it is most helpful to discuss the BLS projections in terms of percent changes rather than the projected number of physicians. That is, a physician who is an administrator is counted by BLS as an administrator rather than as a physician.

offices, affect much larger numbers of patients and physicians. However, technological innovation is just one aspect of the changing clinical practice of medicine. The willingness of consumers to undergo and pay for these tests and treatments, and the willingness of insurers and employers to pay the necessary benefits are likely to affect physician requirements in the future. It is difficult to make quantitative estimates of these factors with any certainty.

None of the major studies of physician requirements addresses the above issues directly and explicitly. The Schwartz study uses the historical change in the Kaiser Health Plan as a proxy. The BHPr model extrapolates the recent trends in key variables affecting utilization. The BLS model extrapolates the trends in the recent growth of various sectors of the economy. Although the GMENAC effort involved a detailed examination of each specialty it approached the problem from the perspective of setting a national goal, not from the perspective of trying to predict what outcome would be most likely to occur.

Moreover, many changes have occurred since the GMENAC effort was undertaken. With more stability in the health care institutions (e.g., PPS has been in place since 1983-1984), and with better data and more research results available it may be possible to narrow the range of the physician requirements estimates in future research efforts.

Table 1

Selected Statistics on Medical Practice, 1976-1986

Measure	1976	1986	Percent Change	Percent Per Year
Total Patient Visits Per Week	134.7	117.7	-13	-1.4
Office Visits Per Week	95.8	75.7	-17	-2.4
Hospital Visits Per Week	35.0	25.8	-36	-3.1
Gross Income	$95,400	$208,500	119	8.1
Net Income	$60,400	$119,500	98	7.1
Professional Expenses	$35,000	$ 89,000	154	9.8
Fee for a New Patient Office Visit	$22.86	$55.75	144	9.3

Source: American Medical Association Center for Health Policy Research, Socioeconomic Characteristics of Medical Practice 1987

Table 2

Selected Statistics on Medical Practice, 1982-1986

Measure	1982	1986	Percent Change	Percent Per Year
Total Patient Visits Per Week	129.1	117.7	-10	-2.5
Office Visits Per Week	80.2	75.7	-6	-1.5
Hospital Visits Per Week	32.3	25.8	-25	-5.8
Gross Income	$158,700	$208,500	31	7.1
Net Income	$ 97,700	$119,500	22	5.2
Professional Expenses	$ 61,000	$ 89,000	46	9.9
Fee for a New Patient Office Visit	$ 43.43	$ 55.75	28	6.4

Source: American Medical Association Center for Health Policy Research, Socioeconomic Characteristics of Medical Practice 1987

Table 3

Annual Rate of Change in the Per Capita Demand/Requirements for Physicians

Study	Percent Increase Per Year
Schwartz et al (1983-2000)	
Residents	1.14
Other Patient Care Physicians	1.6
GMENAC (1978-2000)	0
BHPr (1986-2000)	.3
BLS (1986-2000)	1.5

SOURCE: BHPr Calculations

Table 4

Data on MDs Not in Patient Care Activities, Selected Years

Activity	Number in 1986	Change 1979-1983	Percent Change Per Year 1979-1983	Change 1981-1986	Percent Change Per Year 1981-1986
Research	17,847	4,020	6.1	-54	--
Administration	14,399	1,710	3.3	1,149	1.7
Teaching	7,721	160	.5	519	1.4
Other	3,657	500	4.1	634	3.9
Total	43,624	6,390	4.1	2,248	1.1

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